



# TECHNICAL NOTE TNOI17

## Title: G3 to the ControlLogix via Ethernet IP

### Product(s): G3 HMI Series, AB ControlLogix PLC

#### ABSTRACT

The purpose of this document is to describe the configuration steps necessary to establish a communication path between the G3 and a ControlLogix unit. You will need either a 1756-ENET/B or a 1756-ENBT/A together with a Logix5550 controller. It may be possible to upgrade a 1756-ENET/A to the required 1756-ENET/B by flashing the firmware; you should check the hardware version with your vendor before hand to ensure its suitability. You will also need Rockwell Software's RSLinx and RSLogix 5000 software configuration utilities.

#### INTRODUCTION

In the following example, the ControlLogix will establish a Class1 connection and I/O data will be exchanged between the ControlLogix and the G3 terminal. The network parameters used in this example will almost certainly not apply to your application. Be sure to consult your network administrator when selecting appropriate values.

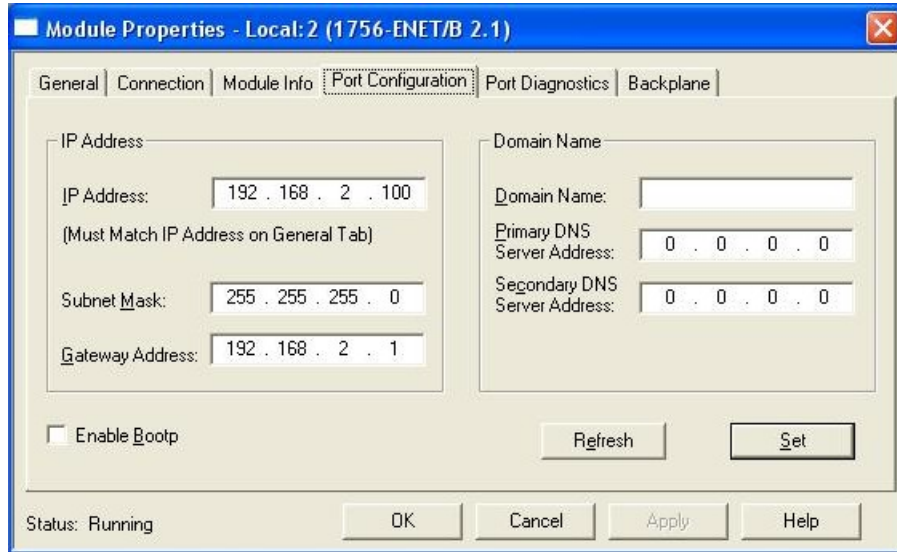
#### CONTROLLOGIX CONFIGURATION

1. Run the RSLogix 5000 program and create a new configuration.
2. Add a 1756-ENET/B or a 1756-ENBT/A to your I/O configuration. You will need to:
  - Switch to offline mode.
  - Right click on the I/O Configuration node in the Controller Organiser view and choose Add Module.
  - In the Select Module Type dialog, choose 1756-ENET/B or 1756-ENBT/A entry. RSLogix will open the Module Properties dialog box.

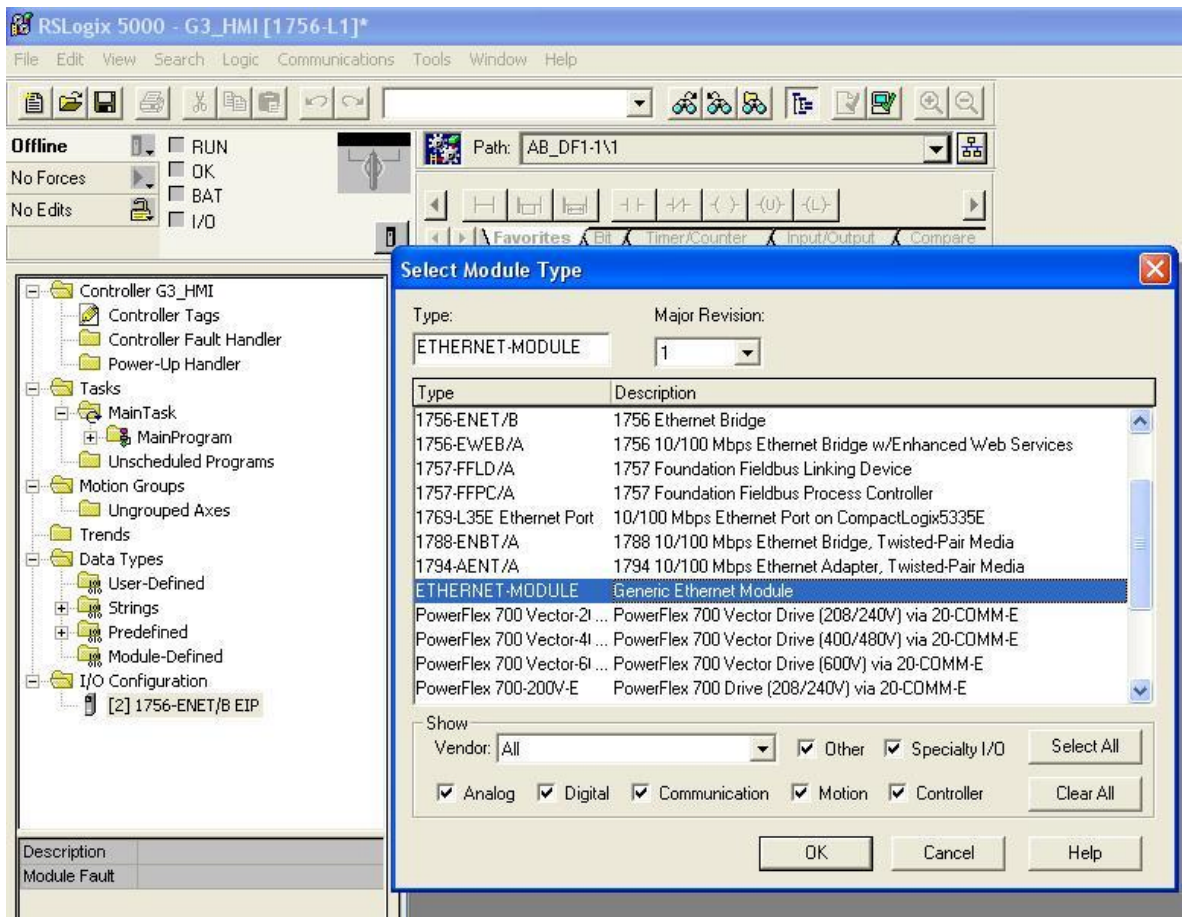
Module Properties - Local (1756-ENET/B 2.1)

Type: 1756-ENET/B 1756 Ethernet Bridge  
Vendor: Allen-Bradley  
Parent: Local  
Name: EIP  
Description:  
Address / Host Name:  
 IP Address: 192 . 168 . 2 . 100  
 Host Name:  
Slot: 2  
Revision: 2 . 1  
Electronic Keying: Compatible Module  
Cancel < Back Next > Finish >> Help

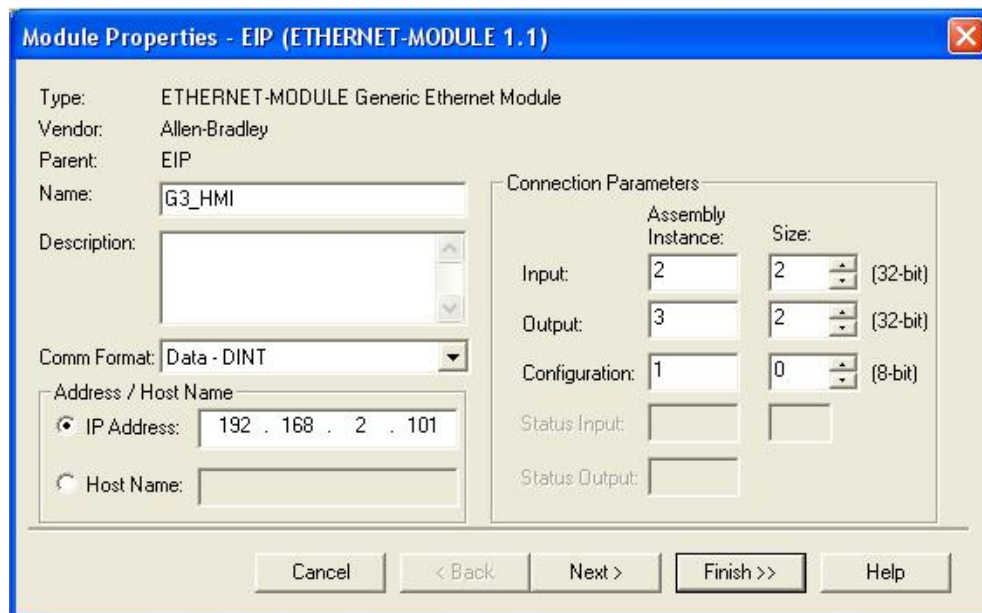
- Enter the IP Address of the ENET/B or ENBT/A interface.
- Click Finish to add the interface to your I/O configuration.
- Download the configuration.
- Switch to online mode and open the 1756-ENET/B or 1756-ENBT/A node properties under the I/O Configuration in the Controller Organiser.
- Select the Port Configuration Tab from the Module Properties dialog box.
- You should now enter the IP Address and Subnet Mask. The IP Address must match the IP Address entered from the General properties page.
- Apply the settings using the Set button.



- You can now verify the network module network communications with your unit using suitable diagnostic tools such as Ping.
3. Now add the G3 HMI to the RSLogix configuration through the following steps:
- Switch to offline mode.
  - Right click on the 1756-ENET/B or 1756-ENBT/A node under the I/O Configuration in the Controller Organiser view and choose Add Module.



- In the Select Module dialog, choose Generic Ethernet Module.
- Click OK. This will open the Module Properties dialog.



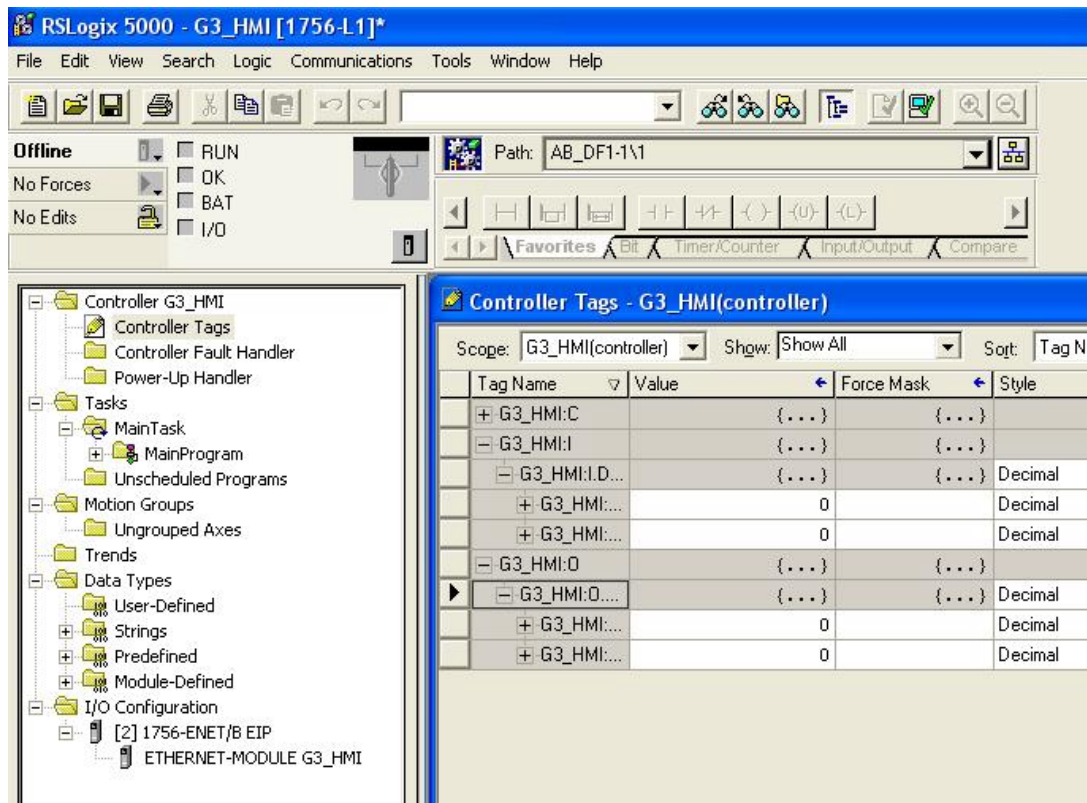
- In the Name, enter a descriptive name to identify the module.
- In the Address/Host Name, enter the IP Address of the G3 HMI.

- Enter 2 in the Input Assembly Connection Point and a size of 2. This will match a read only Slave Gateway block configured in the G3, and will be used for reading data from the G3 to the ControlLogix.
- Enter 3 in the Output Assembly Connection Point and a size of 2. This will match a read/write Slave Gateway block configured in the G3, and will be used for writing data from the ControlLogix to the G3.
- Enter 1 in the Configuration Connection Point and a size of 0. Configuration data is not supported by the G3.
- Press Finish to add the G3\_HMI to the I/O configuration.

The connection points and sizes are arbitrary, as long as the connection point, size, and direction are matched in the configuration of the G3.

Connection point direction is always relative to the originator, which in the case of the current G3 Ethernet/IP implementation is always the device and never the G3. An *input* connection therefore specifies data flow from the G3 to the device, and an *output* connection specifies data flow from the device to the G3.

You should now see a new “ETHERNET-MODULE G3\_HMI” branch of the 1756-ENET/B node in the I/O Configuration view. You should also see 3 new entries in the Controller Tags view: G3\_HMI:I to view the input data, G3\_HMI:O to modify the output data and G3\_HMI:C to view the configuration data:



4. Download the new I/O configuration to the controller. Once the download is complete, the controller will automatically establish a new Class1 connection with the G3.

## G3 CRIMSON CONFIGURATION

### 1. Ethernet Settings

- Configure the IP Address to 192.168.2.101. This should match the Address/Host Name as entered in ETHERNET-MODULE G3\_HMI module properties.

### 2. Protocol Settings

- Select the Ethernet/IP Slave Adaptor communications driver.

The ENET/B module prefixes all output data with a header containing status information about the originator's run/idle state. With the Run/Idle Header checked, the communications driver will automatically process the header, and data will be ignored if the device is in the 'Idle' state. With the option unchecked, extra space must be allocated in the gateway block to receive the status information; all data is accepted regardless of the device state.

### 3. Device Settings

A gateway block must be created for each connection point.

For the purpose of configuring, the data transfer direction the terms *input* and *output* refer to the originator of the connection, and are therefore relative to the device and not the G3. An *input* connection is therefore specified by 'G3 to Device' and an *output* connection is specified by 'Device to G3'.

Connection point mapping is defined in the 'Start Address' block setting and comprises of the connection point instance and a data offset. The instance must match that specified by the originator, the offset can be used to skip over data not required by the G3, useful mainly on shared connection points.

The following settings mirror the I/O settings of the ControlLogix configuration detailed earlier.

#### 3.1. Input Connection Point

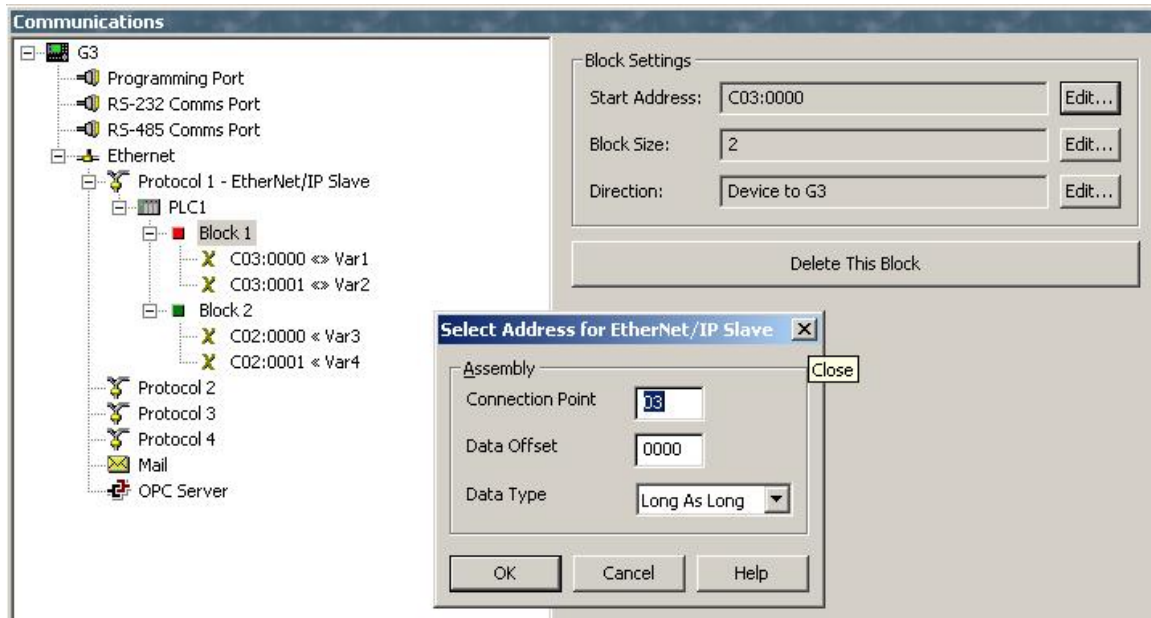
Create a gateway block with the following configuration:

Connection Point:	2
Data Offset:	0000
Data Type:	Long As Long
Block Size:	2
Direction:	G3 to Device

### 3.2. Output Connection Point

Create a gateway block with the following configuration:

Connection Point:	3
Data Offset:	0000
Data Type:	Long As Long
Block Size:	2
Direction:	Device to G3



### 4. Data Mapping

We have now configured the connection points such that:

```
G3_HMI:O    >>    PLC1:Block1
G3_HMI:I    <<    PLC1:Block2
```

### 5. Testing

Using the RSLogix5000 program, you can modify tags G3\_HMI:O and verify they are written into *Var1* and *Var2*, and verify changes made in the G3 to tags *Var3* and *Var4* are updated in G3\_HMI:I. Ensure the device is in the Run mode otherwise the data transfer will be ignored by the G3.